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10/525,396	03/04/2005	Philipp Stoszel	09931-00036-US	7637

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WILMINGTON, DE 19899

EXAMINER

WILSON, MICHAEL H

ART UNIT	PAPER NUMBER
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1794

MAIL DATE	DELIVERY MODE
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12/17/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/525,396

Applicant(s)

STOSSEL ET AL.

Examiner

MICHAEL WILSON

Art Unit

1794

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 8-18 and 22-26 is/are pending in the application.
- 4a) Of the above claim(s) 2, 3, 11, 13, 14, 16-18 and 22-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 5, 8-10, 12 and 15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This Office action is in response to Applicant's amendment filed 9 September 2009, which cancels claims 6 and 7 and amends claims 1, 9, and 10.

Claims 1-5, 8-18, and 22-26 are pending; claims 2, 3, 11, 13, 14, 16-18, and 22-26 are withdrawn.

2. A mistake in the status modifier for claim 10 is noted. The claim is marked as "Original" however the claims has been amended in the reply filed 9 September 2009, thus the correct status modifier is --Currently Amended--.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4, 5, 8, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Kamatani et al. (WO 02/45466 A1), US 2003/0059646 A1 is relied upon as the English language translation.

Regarding claims 1, 4, 5, 8, and 12, Kamatani et al. disclose a compound of formula (I) wherein M is Ir, Y is R-C=C-R, b is 0, a is 0, c is 0, and Ar is carbazole (page 9, table 1-1, compound 36).

5. Claims 1, 4, 5, 8-10, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Kamatani et al. (WO 02/44189 A1).

Regarding claims 1, 4, 5, 8-10, and 12, Kamatani et al. disclose the compound of instant formula (I) wherein n is 3, Y is R-C=C-R, b is 0, M is iridium and Ar is phenyl, naphthyl, or fluorenyl (page 26, tables 1 and 2, compounds 3, 8, 10, and 14). The nitrogen binding ring (pyridine) is substituted with two R groups which form a condensed ring so that the ring with the R groups forms an isoquinoline group.

6. Claims 1, 4, 5, 8-10, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Burn et al. (WO 02/066552 A1).

Regarding claims 1, 4, 5, 8-10, and 12, Burn et al. disclose the compound of instant formula (I) wherein n is 2, Y is R-C=C-R, b is 0, M is iridium and Ar is phenyl with two Q of phenyl or a 1,3-terphenylene (page 27, example compound 9; figure 4). While compounds 11 and 27 of Burn et al. are excluded from the present claims, compound 9 is not.

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 1, 4, 5, 8-10, 12, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi et al. (US 2001/0019782 A1).

Regarding claims 1, 4, 5, 8-10, 12, and 15, Igarashi et al. disclose an iridium complex with three bidentate phenylpyridine ligands (page 14, compound 1-42) with instant a, b, and c as 0. The reference discloses that the phenyl moiety may be substituted at any position (page 4, general formula 3 and [0029]) and specifically teaches phenyl substitution in the 6 and 4 positions (page 14, compounds 1-42 and 1-45). The reference does not explicitly disclose that phenyl may be substituted in the 5-position.

However, it would be obvious to one of ordinary skill in the art at the time of the invention to place the phenyl substituent in the 5-position. One of ordinary skill would reasonably expect substitution in the 5-position to produce a compound with similar properties and suitable for the same purpose given that Igarashi et al. teach any position as suitable and specifically teach both the 6 and 4 substituted positions to be suitable. Substitution in the 4, 5, and 6, positions are position isomers. Compounds which are position isomers (compounds having the same radicals in physically different positions on the same nucleus) are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties. *In re Wilder*, 563 F.2d 457, 195 USPQ 426 (CCPA 1977). See also *In re May*, 574 F.2d 1082, 197 USPQ 601 (CCPA 1978) (stereoisomers prima facie obvious). One of ordinary skill in the art would be motivated by a desire to produce new compounds for the purposes of the prior art and within the guidelines of the prior art.

Regarding claim 15, modified Igarashi et al. discloses all the claim limitation as set forth above. The reference does not explicitly disclose the purity of the compounds. However it would be obvious to one of ordinary skill in the art at the time of the invention to purify the compounds of Igarashi et al. using methods well known in the art to obtain a purity of 99%. Since the instant specification is silent to unexpected results, purity is not considered to confer patentability to the claims. As the product properties are a variable(s) that can be modified, among others, by product purity, the precise purity would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the purity of the compound cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the purity of the compounds in the device of Igarashi et al to remove undesired impurity emission and obtain desired product properties (*In re Boesch*, 617 F.2d. 272,205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kamatani et al. (WO 02/45466 A1) as applied to claim 1 above, US 2003/0059646 A1 is relied upon as the English language translation.

Regarding claim 15, Kamatani et al. discloses all the claim limitation as set forth above. The reference does not explicitly disclose the purity of the compounds. However it would be obvious to one of ordinary skill in the art at the time of the invention to purify the compounds of Kamatani et al. using methods well known in the art to obtain a purity of 99%. Since the instant specification is silent to unexpected results, purity is not considered to confer patentability to the claims. As the product properties are a variable(s) that can be modified, among others, by product purity, the precise purity would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the purity of the compound cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the purity of the compounds in the device of Kamatani et al to remove undesired impurity emission and obtain desired product properties (*In re Boesch*, 617 F.2d. 272,205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

10. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kamatani et al. (WO 02/44189 A1).

Regarding claim 15, Kamatani et al. discloses all the claim limitation as set forth above. The reference does not explicitly disclose the purity of the compounds. However

it would be obvious to one of ordinary skill in the art at the time of the invention to purify the compounds of Kamatani et al. using methods well known in the art to obtain a purity of 99%. Since the instant specification is silent to unexpected results, purity is not considered to confer patentability to the claims. As the product properties are a variable(s) that can be modified, among others, by product purity, the precise purity would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the purity of the compound cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the purity of the compounds in the device of Kamatani et al. to remove undesired impurity emission and obtain desired product properties (*In re Boesch*, 617 F.2d. 272,205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

11. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burn et al. (WO 02/066552 A1).

Regarding claim 15, Burn et al. discloses all the claim limitation as set forth above. The reference does not explicitly disclose the purity of the compounds. However it would be obvious to one of ordinary skill in the art at the time of the invention to purify

the compounds of Burn et al. using methods well known in the art to obtain a purity of 99%. Since the instant specification is silent to unexpected results, purity is not considered to confer patentability to the claims. As the product properties are a variable(s) that can be modified, among others, by product purity, the precise purity would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the purity of the compound cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the purity of the compounds in the device of Burn et al. to remove undesired impurity emission and obtain desired product properties (*In re Boesch*, 617 F.2d. 272,205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

Response to Arguments

12. Applicant's arguments filed 9 September 2009 have been fully considered but they are not persuasive.

Applicants argue regarding Kamatani et al. (WO 02/45466 A1) the possibility that Ar is carbazole has been deleted from the claims. The examiner agrees that carbazole has been deleted from claim 9, however carbazole is still included in the other pending claims and expressly included in claims 1 and 8.

Applicants argue regarding Igarashi et al. (US 2001/0019782 A1) that the person of ordinary skill in the art would not be aware of how to synthesize the corresponding aryl-substituted free ligand (a 2-(3'-phenylphenyl)pyridine ligand). Therefore, applicants assert that the person of ordinary skill in the art with the knowledge of the Igarashi et al. publication, would still not know how to make the complexes according to present claim 1 as the synthetic methods taught by Igarashi are not capable of making the complexes substituted with aryl groups in the position para to the iridium as claimed.

Igarashi et al. do not specifically disclose synthetic methods to make the ligands taught in the reference but teach in paragraph [0086] that known methods can be used. The reference is therefore asserting that one of ordinary skill in the art could determine how to make the ligands within the disclosure of Igarashi et al. by routine experimentation. Kamatani et al. (WO 02/45466 A1) in example 28 teach the use of Suzuki coupling to make 2-(4'-fluorophenyl)pyridine. Suzuki coupling is a standard technique in organic chemistry to form carbon-carbon bonds. It is the examiner's position that one of ordinary skill in the art would be familiar with this technique and that it would be within the skill of the ordinary artisan, within routine experimentation, to adapt this technique to synthesize a ligand such as 2-(3'-phenyl)phenylpyridine. In fact Burn et al. (WO 02/066552 A1) disclose this synthetic route. Burn et al. make 2(3'-bromophenyl)pyridine using Suzuki coupling with an 80% yield (pages 24 and 25; example 6) and then perform a second Suzuki coupling to replace the bromo substituent with a substituted phenyl going an 86% yield (pages 25 and 26; example 7).

Additionally applicants argue regarding Igarashi et al. that in the claimed metal complexes the emission maximum of these compounds is blue-shifted by about 26 nm compared to compounds where the phenyl group is bound meta to the position of the coordination of the iridium. To show this technical effect, the applicant has enclosed the photoluminescence spectrum of the compound according to Example 7 of the present Invention, which has an emission maximum of 512 nm, thus leading to pure green emission. Also the use of these compounds in an OLED still leads to pure green emission as can be seen from Table 2 of the present invention. In contrast, applicants assert that the compounds having a phenyl group in the position meta to the coordination to the iridium have an emission maximum around 537 nm, thus leading to yellow-green emission, but not to green emission.

It is well settled that evidence presented to rebut a prima facie case of obviousness must be commensurate in scope with the claims to which it pertains and that such evidence which is considerably narrower in scope than claimed subject matter is not sufficient to rebut a prima facie case of obviousness. *In re Dill*, 604 F.2d 1356, 1361, 202 USPQ805, 808 (CCPA 1979). Also see *In re Boesch*, 617 F.2d at 276, 205 USPQ at 219; *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972) and *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). As rejected claim 1 is significantly broader than the presented evidence, which applicant cites as an example of unexpected results and which is limited to a comparison of compositions containing a specific phenyls, the evidentiary showing is far from being commensurate in scope with the degree of patent protection sought. *In re Kulling*, 897 F.2d 1147, 1149, 14 USPQ2d

1056, 1058 (fed. Cir. 1990) ("[O]bjective evidence of nonobviousness must be commensurate in scope with the claims." (quoting *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972); *In re Dill*, 604 F.2d 1356, 1361, 202 USPQ 805, 808 (CCPA 1979) ("The evidence presented to rebut a prima facie case of obviousness must be commensurate in scope with the claims to which it pertains.").

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL WILSON whose telephone number is (571) 270-3882. The examiner can normally be reached on Monday-Thursday, 7:30-5:00PM EST, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 1794

MHW